

(19)



JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **06086120 A**

(43) Date of publication of application: **25 . 03 . 94**

(51) Int. Cl

**H04N 5/225**  
**H04N 5/781**

(21) Application number: **04255677**

(71) Applicant: **CANON INC**

(22) Date of filing: **31 . 08 . 92**

(72) Inventor: **ETO KAZUHIKO**

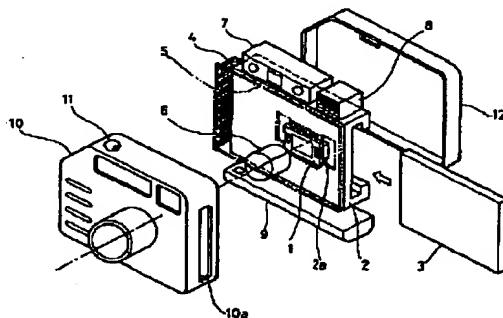
(54) **ELECTRONIC STILL CAMERA**

(57) Abstract:

**PURPOSE:** To provide an electronic still camera whose miniaturization is effectively realized.

**CONSTITUTION:** The camera is provided with a solid-state image pickup element 1 and a recording medium 3 such as solid-state memory or a hard disk. The solid-state image pickup element 1 or a board 5 on which the solid-state image pickup element 1 is packaged are assembled to a support member 2 for the recording medium 3 especially. Miniaturization is effectively realized by adopting the configuration that the solid-state image pickup element 1 or the board 5 on which the solid-state image pickup element 1 is mounted is directly assembled to the support member 2.

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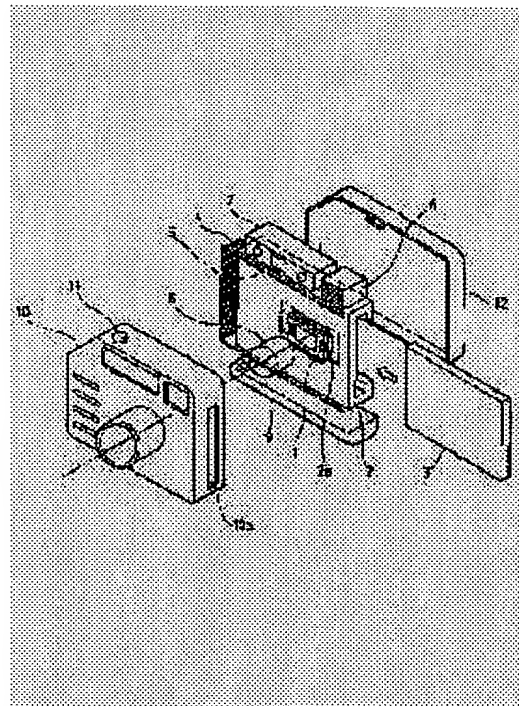
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## LEGAL STATUS

[Date of request for examination] 20.08.1999

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3466647

[Date of registration] 29.08.2003

[Number of appeal against examiner's decision of

rejection]

[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]

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CLAIMS

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[Claim(s)]

[Claim 1] The electronic "still" camera characterized by constituting so that the substrate which mounted the above-mentioned solid state image sensor or the solid state image sensor in the attachment component for the above-mentioned record medium may be attached in the electronic "still" camera which has record media, such as a solid state image sensor and solid-state memory, or a hard disk.

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DETAILED DESCRIPTION

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## [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the electronic "still" camera which records the signal read from the solid state image sensor on record media, such as solid-state memory or a hard disk.

[0002]

[Description of the Prior Art] The conventional common electronic "still" camera changes into an image information signal the photographic subject light which passed the taking lens, and has composition which records this image information signal on a record medium. For this reason, with this seed camera, while equipping the posterior part of a taking-lens unit with the solid state image sensor, it has the attachment component of the record medium which records the image information signal which a solid state image sensor outputs. Moreover, the above-mentioned electronic "still" camera has the thing equipped with a finder unit, a signal-processing substrate, a dc-battery, or a stroboscope for checking photographic coverage etc.

[0003]

[Problem(s) to be Solved by the Invention] However, in this conventional electronic "still" camera, a solid state image sensor unit, a record-medium unit and other units, or components are attached to each \*\* by using a frame as a support base, respectively. Thus, since it has the structure where each unit was divided by the frame, with the configuration separately attached through a frame, it is very disadvantageous, when raising space efficiency and attaining the miniaturization of a camera.

[0004] This invention aims at offering the electronic "still" camera which can realize a miniaturization effectively in view of this actual condition.

[0005]

[Means for Solving the Problem] Although it has record media, such as a solid state image sensor and solid-state memory, or a hard disk, the electronic "still" camera of this invention is constituted so that the substrate which mounted the solid state image sensor or the solid state image sensor especially in the attachment component for a record medium may be attached.

[0006]

[Function] According to this invention, a miniaturization can be effectively attained by having considered the substrate unit in which the solid state image sensor or the solid state image sensor was mounted as mentioned above as the configuration directly attached to the attachment component of a record medium.

[0007]

[Example] Hereafter, based on drawing 1 and drawing 2, one example of the electronic "still" camera by this invention is explained. Although drawing 1 shows the example of a configuration of the electronic "still" camera which applied this invention, in drawing, the solid state image sensor with which 1 changes by CCD (Charge Coupled Device) etc., and 2 are the attachment components for the record medium mentioned later, and are equipped with \*\*\*\*\* 2a of the above-mentioned solid state image sensor 1. A connector for 3 to perform record media, such as solid-state memory or a hard disk, between a record medium 3 and a camera, and for 4 perform transfer and current supply of data and 5 are the circuit boards which mounted the controller for a digital disposal circuit and system control, and the above-mentioned solid state image sensor 1 grade.

[0008] Moreover, the finder unit equipped with floodlighting / light-receiving equipment for [ 6 ] a finder and automatic focuses in a taking-lens unit and 7, a recharge bull dc-battery with 8 [ removable / a stroboscope unit and 9 / to a camera ], and 10 are anterior part coverings, and have insertion opening 10a for the above-mentioned record medium 3. The release carbon button which is an actuation switch for further 11 to generate the trigger signal of image

record, and 12 are posterior part coverings.

[0009] Drawing 2 shows the joint relation between the above-mentioned solid state image sensor 1 and an attachment component 2. A solid state image sensor 1 is fixed by the bis-bundle or adhesives by 2-4 places in \*\*\*\*\* 2a of the above-mentioned attachment component 2. Moreover, the above-mentioned circuit board 5 is arranged in parallel with an attachment component 2 at the before side, and is connected with the solid state image sensor 1 through soldering. On the other hand, the circuit board 5 is connected with the above-mentioned connector 4 by the edge 5a again.

[0010] Here, drawing 3 shows the example at the time of fixing to an attachment component 2 the circuit board 5 in which the solid state image sensor 1 was mounted. In this example, the above-mentioned circuit board 5 is positioned by shank 2c while being fixed to \*\*\*\*\* 2b of an attachment component 2. In addition, although the recharge bull dc-battery 9 has composition which arranges a thin thing on the inferior surface of tongue of a camera in the example shown in drawing 1, that hold nature can be raised by seeing from the front face of a camera in this drawing 3, arranging recharge bull dc-battery 9' on the left-hand side of the lens barrel of the taking-lens unit 6, and attaching a proper grip configuration to the anterior part covering 10 (referring to drawing 1).

[0011] With the electronic "still" camera of this invention, the circuit board 5 in which a solid state image sensor 1 or this solid state image sensor 1 was mounted is directly attached to the attachment component 2 of a record medium 3 through \*\*\*\*\*2a or \*\*\*\*\* 2b, and shank 2c as mentioned above. That is, since it is separately supported by the frame as a solid state image sensor unit and a record-medium unit, respectively, and is not attached but it is attached to an attachment component 2 in one like the above-mentioned example, a deployment of a tooth space can be aimed at.

[0012] In addition, although the example in case the circuit board 5 is an one-sheet configuration was explained in the above-mentioned example, high space efficiency can be obtained by arranging them in parallel with mutual in the case of two or more sheets. Furthermore, although considered as the configuration which arranges a record medium 3 to an optical axis and a perpendicular, and serves as a thin shape in the above-mentioned example, of course, this record medium 3 may be arranged to an optical axis and parallel. Moreover, when you need light filters, such as an infrared cut filter, for example, this light filter and solid state image sensor 1 are put side by side to an attachment component 2, and it can fix, and can acquire the operation effectiveness same even in this case as the above-mentioned example.

[0013]

[Effect of the Invention] As explained above, according to this invention, by having considered the substrate unit in which the solid state image sensor or the solid state image sensor was mounted as the configuration attached to the attachment component of a record medium, miniaturization of a camera and thin shape-ization can be attained effectively and this seed camera that was excellent in portability by this can be realized.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the decomposition perspective view showing the whole one example configuration of the electronic "still" camera of this invention.

[Drawing 2] It is the plane section Fig. showing joint relation with the attachment component of the solid state image sensor concerning the electronic "still" camera of this invention.

[Drawing 3] It is the plane section Fig. showing other joint relation with the attachment component of the solid state image sensor concerning the electronic "still" camera of this invention.

[Description of Notations]

- 1 Solid State Image Sensor
- 2 Attachment Component Child
- 3 Record Medium
- 4 Connector
- 5 Circuit Board
- 6 Taking-Lens Unit
- 7 Finder Unit
- 8 Stroboscope Unit
- 9 Recharge JIBURU Dc-battery
- 10 Anterior Part Covering
- 11 Release Carbon Button
- 12 Posterior Part Covering

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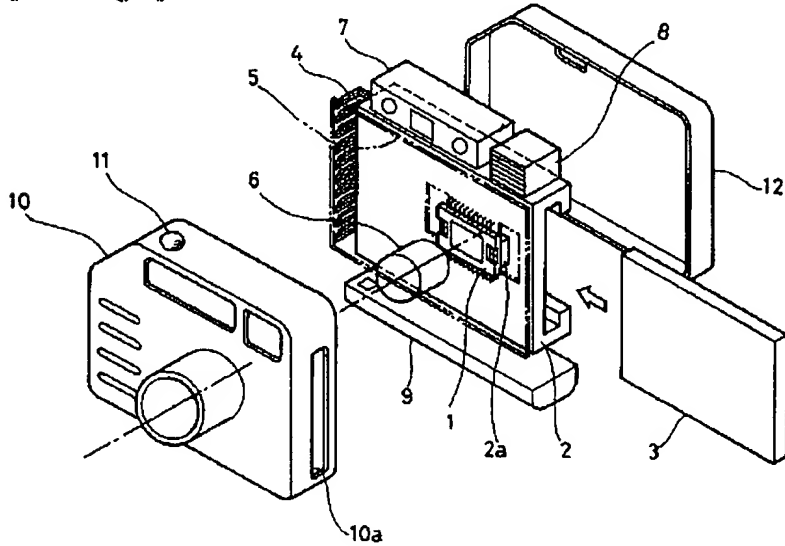
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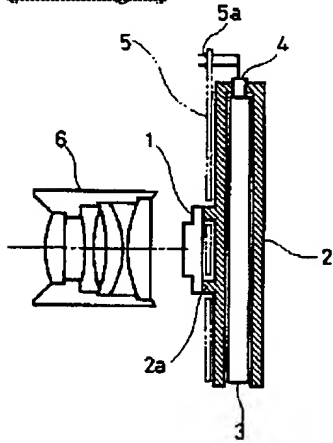
DRAWINGS

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[Drawing 1]

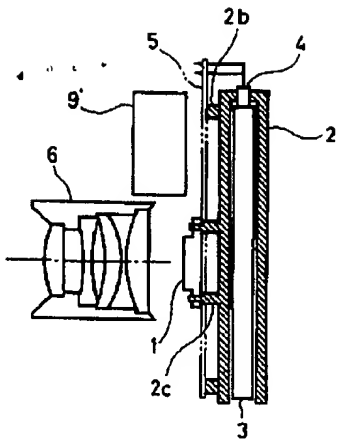


[Drawing 2]



[Drawing 3]





[Translation done.]

PAT-NO: JP406086120A

DOCUMENT-IDENTIFIER: JP 06086120 A

TITLE: ELECTRONIC STILL CAMERA

PUBN-DATE: March 25, 1994

INVENTOR-INFORMATION:

NAME

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NAME

CANON INC

COUNTRY

N/A

APPL-NO: JP04255677

APPL-DATE: August 31, 1992

INT-CL (IPC): H04N005/225, H04N005/781

ABSTRACT:

**PURPOSE:** To provide an electronic still camera whose miniaturization is effectively realized.

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(19)日本国特許庁(JP)

(12)公開特許公報(A)

(11)特許出願公開番号

特開平6-86120

(43)公開日 平成6年(1994)3月25日

(51)IntCl<sup>5</sup>

H04N 5/225  
5/781

識別記号

F

E

庁内整理番号

7916-5C

FI

技術表示箇所

審査請求 未請求 請求項の数1(全3頁)

(21)出願番号 特願平4-255677

(22)出願日 平成4年(1992)8月31日

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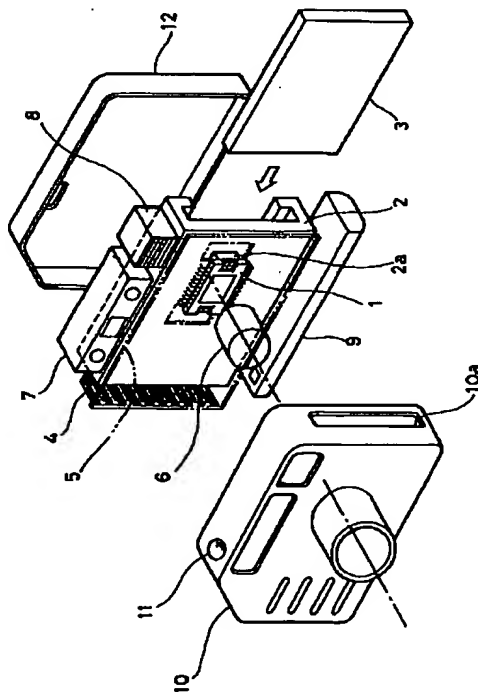
(74)代理人 弁理士 國分 孝悦

(54)【発明の名称】 電子スチルカメラ

(57)【要約】

【目的】 有効に小型化を実現し得る電子スチルカメラを提供する。

【構成】 固体撮像素子1及び固体メモリ又はハードディスク等の記録媒体3を有している。特に記録媒体3のための保持部材2に、固体撮像素子1又は固体撮像素子1を実装した基板5を組付けるように構成したものである。固体撮像素子1もしくは固体撮像素子1が実装された基板5を、記録媒体3の保持部材2に直接に組付ける構成としたことにより、有効に小型化を図ることができる。



## 【特許請求の範囲】

【請求項1】 固体撮像素子及び固体メモリ又はハードディスク等の記録媒体を有する電子スチルカメラにおいて、上記記録媒体のための保持部材に、上記固体撮像素子又は固体撮像素子を実装した基板を組付けるように構成したことを特徴とする電子スチルカメラ。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】本発明は、固体撮像素子から読み出された信号を、固体メモリ又はハードディスク等の記録媒体に記録する電子スチルカメラに関する。

## 【0002】

【従来の技術】従来の一般的な電子スチルカメラは、撮影レンズを通過した被写体光を画像情報信号に変換し、この画像情報信号を記録媒体に記録する構成になっている。このため、この種カメラでは撮影レンズユニットの後部に固体撮像素子を備えていると共に、固体撮像素子が出力する画像情報信号を記録する記録媒体の保持部材を備えている。また上記電子スチルカメラは撮影範囲を確認するためのファインダユニット、信号処理基板、バッテリー又はストロボ等を備えたものがある。

## 【0003】

【発明が解決しようとする課題】しかしながら、かかる従来の電子スチルカメラにおいて、固体撮像素子ユニット、記録媒体ユニット及びその他のユニットもしくは部品が、それぞれフレームを支持基体として各別に組付けられている。このように別個にフレームを介して組付ける構成では、各ユニットがフレームによって仕切られた構造となっているため、スペース効率を高めてカメラの小型化を図る上で極めて不利である。

【0004】本発明はかかる実情に鑑み、有効に小型化を実現することができる電子スチルカメラを提供することを目的とする。

## 【0005】

【課題を解決するための手段】本発明の電子スチルカメラは、固体撮像素子及び固体メモリ又はハードディスク等の記録媒体を有しているが、特に記録媒体のための保持部材に、固体撮像素子又は固体撮像素子を実装した基板を組付けるように構成したものである。

## 【0006】

【作用】本発明によれば、上記のように固体撮像素子もしくは固体撮像素子を実装された基板ユニットを、記録媒体の保持部材に直接に組付ける構成としたことにより、有効に小型化を図ることができる。

## 【0007】

【実施例】以下、図1及び図2に基づき、本発明による電子スチルカメラの一実施例を説明する。図1は本発明を適用した電子スチルカメラの構成例を示しているが、図において、1はCCD (Charge Coupled Device) 等で成る固体撮像素子、2は後述する記録媒体のための保

持部材であり、上記固体撮像素子1の組付部2aを備えている。3は固体メモリ又はハードディスク等の記録媒体、4は記録媒体3及びカメラ間でデータの授受や電源供給を行うためのコネクタ、5は信号処理回路、システム制御のためのコントローラ及び上記固体撮像素子1等を実装した回路基板である。

【0008】また、6は撮影レンズユニット、7はファインダ及びオートフォーカス用の投光・受光装置を備えたファインダユニット、8はストロボユニット、9はカメラに着脱可能なリチャージブルバッテリー、10は前部カバーであり、上記記録媒体3のための挿入口10aを有している。更に11は映像記録のトリガー信号を生成するための操作スイッチであるリリースボタン、12は後部カバーである。

【0009】図2は上記固体撮像素子1及び保持部材2の結合関係を示している。固体撮像素子1は、上記保持部材2の組付部2aにおいて2〜4か所でビス締め又は接着剤等により固定されるようになっている。また、上記回路基板5は保持部材2と平行に且つその前側に配置されており、半田付けを介して固体撮像素子1と接続されている。一方また、回路基板5はその端部5aで上記コネクタ4と接続されている。

【0010】ここで、図3は固体撮像素子1が実装された回路基板5を、保持部材2に固定した場合の例を示している。この例では、上記回路基板5は保持部材2の組付部2bに固定されると共に、軸部2cによって位置決めされるようになっている。なお、リチャージブルバッテリー9は図1に示した例では、薄型のものをカメラの下面に配置する構成となっているが、この図3においてカメラ前面から見て撮影レンズユニット6のレンズ鏡筒の左側にリチャージブルバッテリー9'を配置し、前部カバー10 (図1参照) に適宜のグリップ形状を付設することにより、そのホールド性を高めるようにすることもできる。

【0011】上記のように本発明の電子スチルカメラでは、固体撮像素子1又はこの固体撮像素子1が実装された回路基板5が、組付部2aもしくは組付部2b又軸部2cを介して記録媒体3の保持部材2に直接に組付けられている。即ち、固体撮像素子ユニット、記録媒体ユニットとしてそれぞれ別個にフレームに支持されて組付けられるのではなく、上記実施例のように保持部材2に一体的に組付けられるため、スペースの有効利用を図ることができる。

【0012】なお、上記実施例においては回路基板5が1枚構成の場合の例を説明したが、複数枚の場合にはそれらを相互に平行に配置することにより、高いスペース効率を得ることができる。さらに、上記実施例では、記録媒体3を光軸と垂直に配置して薄型となる構成としたが、該記録媒体3を光軸と平行に配置してもよいのは勿論である。また、例えば赤外線カットフィルター等の光

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学フィルターを必要とする場合には、この光学フィルターと固体撮像素子1とを保持部材2に併設して固定するようにすることができ、この場合でも上記実施例と同様な作用効果を得ることができる。

#### 【0013】

【発明の効果】以上説明したように、本発明によれば、固体撮像素子もしくは固体撮像素子が実装された基板ユニットを、記録媒体の保持部材に組付ける構成としたことにより、有効にカメラの小型化、薄型化を図ることができ、これにより携帯性に優れたこの種カメラを実現することができる。

#### 【図面の簡単な説明】

【図1】本発明の電子スチルカメラの一実施例の全体構成を示す分解斜視図である。

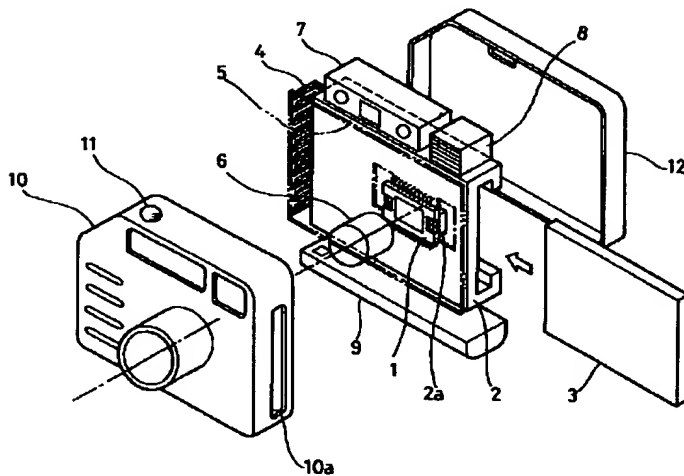
【図2】本発明の電子スチルカメラに係る固体撮像素子の保持部材との結合関係を示す平断面図である。

【図3】本発明の電子スチルカメラに係る固体撮像素子の保持部材と他の結合関係を示す平断面図である。

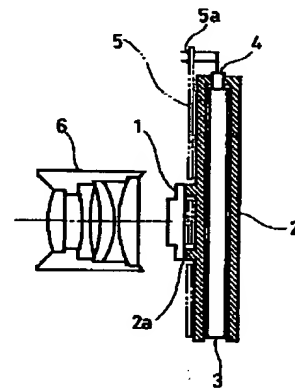
#### 【符号の説明】

- 1 固体撮像素子
- 2 保持部材
- 3 記録媒体
- 4 コネクタ
- 5 回路基板
- 6 撮影レンズユニット
- 7 ファインダユニット
- 8 ストロボユニット
- 9 リチャージジブルバッテリー
- 10 前部カバー
- 11 レリーズボタン
- 12 後部カバー

【図1】



【図2】



【図3】

